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In the claims:

All pending claims are set forth here. Cancel claims 2, 5, 7-8, and 13-47. Amend claims 1 and 9 to read as follows. Claims 2, 5, 13 and 46 have been previously canceled.

1 (currently amended). A composite structure, comprising:

a substrate comprising a selected substrate material and having a substrate coefficient of thermal expansion; and

~~a coating~~ adjoined to layer integrated with an exposed surface of the substrate, wherein the ~~coating~~ layer comprises between 5 percent and 70 percent tantalum disilicide, between 1 percent and 30 percent molybdenum disilicide, and between 10 percent and 95 percent borosilicate glass and comprises at least first and second sub-layers, with the first sub-layer being positioned adjacent to and between the substrate exposed surface and the second sub-layer, and the first and second sub-layers and the substrate forming a functionally gradient system in which the second sub-layer impregnates the first sub-layer and the first sub-layer impregnates the substrate [.]

wherein the first sub-layer comprises a first non-zero percentage of tantalum disilicide, a second non-zero percentage of molybdenum disilicide and a third non-zero percentage of borosilicate glass, the second sub-layer comprises a fourth non-zero percentage of tantalum disilicide, a fifth non-zero percentage of molybdenum disilicide and a sixth non-zero percentage of borosilicate glass, and

wherein the first, second and third percentages are chosen so that a coefficient of thermal expansion of the first sub-layer is substantially the same as the substrate coefficient of thermal expansion, and

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wherein the fourth, fifth and sixth percentages are chosen to provide a protective layer when exposed to temperatures up to at least 3000 °F and are chosen to provide a coefficient of thermal expansion for the second sub-layer for which the thermal expansion coefficient difference for the first sub-layer and the second sub-layer is smaller than the coefficients of thermal expansion for the first sub-layer and for the second sub-layer.

2 (canceled).

3 (currently amended). The composite structure of claim 1, wherein said ~~coating~~ layer further comprises a processing aid.

4 (previously amended). The composite structure of claim 3, wherein said processing aid comprises silicon hexaboride.

5 (canceled).

6 (currently amended). The composite structure of claim 1, wherein ~~a surface layer of the coating~~ said first sub-layer layer comprises between 10 percent and 65 percent tantalum disilicide, at least 5 percent molybdenum disilicide and between 20 percent and 45 percent borosilicate glass.

7-8 (canceled).

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9 (currently amended). The composite structure of claim [[8]] 1, wherein said first sub-layer and said second sub-layer together impregnates said surface of said substrate to a depth of approximately 0.1 inches.

10 (previously amended). The composite structure of claim 1, wherein said substrate is selected from the group consisting of a fibrous and open pore silica, silicon carbide, aluminosilicate, silicon oxycarbide and carbon substrates.

11 (previously amended). The composite structure of claim 1, wherein at least one component of said coating has a particle size less than about 5  $\mu\text{m}$ .

12 (previously amended). The composite structure of claim 1, wherein at least one component[[s]] of said coating has a particle size distribution having a maximum of approximately 5  $\mu\text{m}$  and a mode of approximately 1  $\mu\text{m}$ .

13-47 (canceled).